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Jaxea nocturna Nardo, 1847 (Crustacea, Thalassinidea, Laomediidae) from the Pliocene of Catalonia (Spain)

Abstract - *Jaxea nocturna* Nardo, 1847 (Laomediidae Borradaile, 1903) is reported from the Pliocene of Papiol (Barcelona). The report of *J. nocturna* in Spain enhances the knowledge of the genus because not only it is the most complete fossil species known then in Europe, but it enlarges the palaeogeographic distribution of the genus, known to date only in Italy and Hungary.

Key words: Crustacea, Thalassinidea, Pliocene, Spain.

Resumen - *Jaxea nocturna* Nardo, 1847 (Crustacea, Thalassinidea, Laomediidae) del Plioceno inferior de Cataluña (España).

Se describe un conjunto de crustáceos talassinidos recuperados en las cercanías de la localidad del Papiol (Barcelona). Los ejemplares estudiados se ascriben a la infraorden Thalassinidea Latreille, 1831 y se asignan a la especie *Jaxea nocturna* Nardo, 1847 (Laomediidae Borradaile, 1903). La confirmación de *J. nocturna* es notable no tan solo por representar la especie fósil más completa hasta ahora conocida en Europa, sino por ampliar la distribución paleogeográfica del género, conocido hasta el momento tan sólo en Italia y Hungría.

Palabras clave: Crustacea, Thalassinidea, Plioceno, España.

Riassunto - *Jaxea nocturna* Nardo, 1847 (Crustacea, Thalassinidea, Laomediidae) del Pliocene inferiore della Catalonia (Spagna).

Jaxea nocturna Nardo, 1847 (Laomediidae Borradaile, 1903) è segnalata nel Pliocene di Papiol (Barcellona). La scoperta di *J. nocturna* in Spagna incrementa le conoscenze del genere in quanto si tratta della specie più completa finora conosciuta in Europa, allargando inoltre la distribuzione paleogeografica del genere, conosciuto finora solo in Italia e Ungheria.

Parole chiave: Crustacea, Thalassinidea, Pliocene, Spagna.

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Introduction and geological setting

The marine sediments yielding crustaceans around the village of Papiol (Fig. 1) were firstly described during the nineteenth century, being yet assigned as Pliocene in age (Almera, 1894). The layers, rather homogeneous and of a decametric thickness, consist of blue and yellow clays widely distributed along the Baix Llobregat basin. The study of the abundant and diverse macrofauna, mainly represented by gastropods, bivalves and leaves, has resulted in numerous publications (Almera, 1894; Sanz, 1983; Solsona, 1999), confirming the infilling of the basin during the Zanclean marine transgression. After the Messinian regression, the valley of the river Llobregat was deeply eroded, as much basins along the northwestern Mediterranean coast; during the lower Pliocene, the sea level raised, forming bays and estuaries. South to the Papiol village, a protected small bay was conformed between Palaeozoic hills, where plastic clays were deposited recording the local fauna. According to Solsona (1999), the gastropods recovered from the blue clays are indicators of deep depositional conditions in contrast to lateral sands around the area that indicate a shallower facies.

A systematic collection from the deposits above-mentioned, of otoliths and diverse fish remains was studied by Mr. Mañé for more than twenty years (Mañé *et al.*, 1995, 1996; Nolf *et al.*, 1998). We recovered decapods housed within the collections of the Museu Geològic del Seminari Conciliar of Barcelona. The thalassinids object of this study were finely preserved together with a diverse macrofauna of gastropods, bivalves, leaves, and interesting but less frequent fish remains and some brachyurans, being recognised the genera *Geryon*, *Goneplax*, and rare raninoids.

Previous reports of Pliocene laomedids from Spain

The specimens of laomedids from the Pliocene of Spain are rare and limited today only to two reports. Müller (1993) reported several specimens from Molins de Rei (Martinell and Castillo collections), 35 specimens from Papiol (Mañé collection, housed in MGSB), pointing out that the poorly preserved specimens do

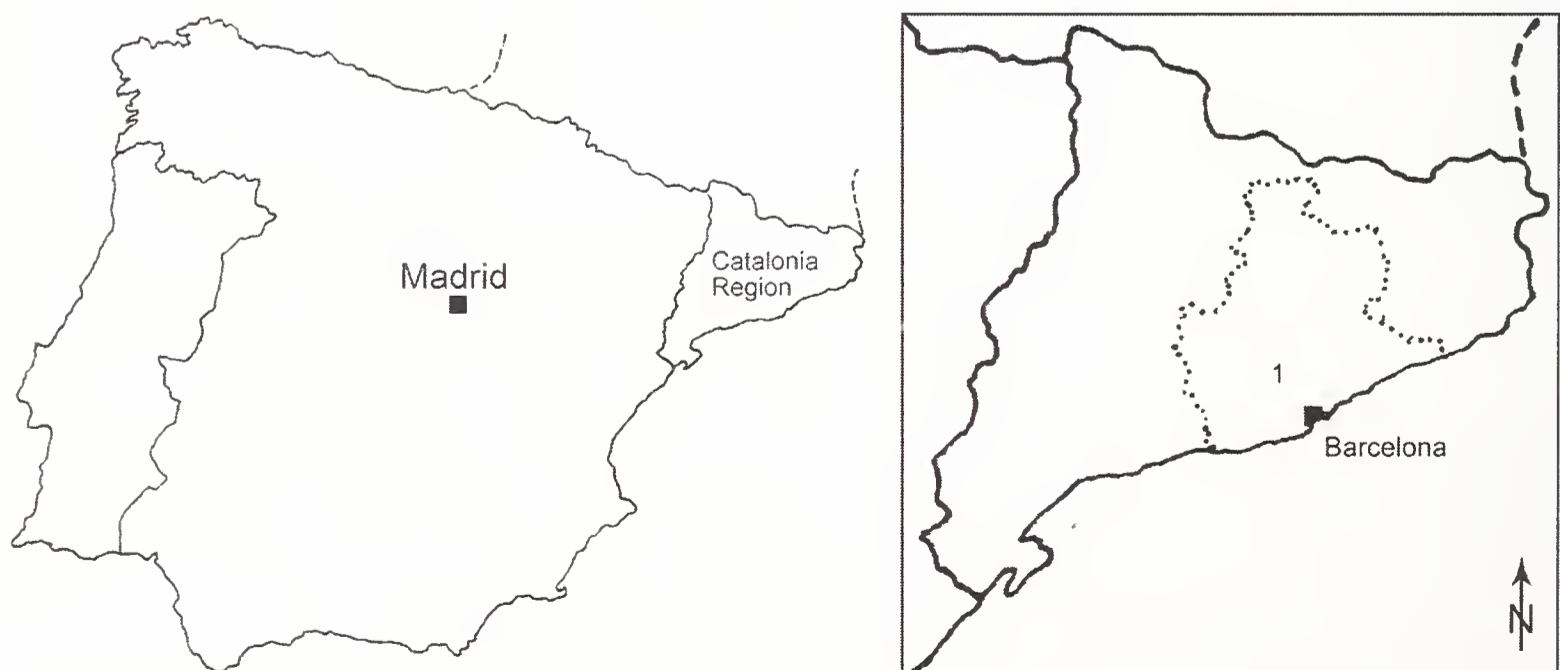


Fig. 1 – Geographic map with the fossiliferous locality / cartina geografica con la località fossilifera. 1) Papiol.

not make possible to separate them from the living Mediterranean *Jaxea nocturna* Nardo, 1847. Later Mayoral *et al.* (1998) reported two isolated chelae from the northwestern area of the Neogene (lower Pliocene) Guadalquivir Basin (Sevilla) ascribing them to *Jaxea cf. nocturna*.

Material

The studied sample includes eighteen fragmentary and articulate specimens, housed in the Museu Geològic del Seminari Conciliar of Barcelona (MGSB). The specimens are flattened on the bedding planes. Their preparation was easy as a result of the softness of the surrounding argillaceous matrix. The studied specimens are ascribed to *Jaxea nocturna* Nardo, 1847.

The systematic arrangement used in this paper follows the recent classification proposed by Tsang *et al.* (2008).

Abbreviations

P1-P5, first to fifth pereopods.

Measurements are given in millimetres (mm).

Systematic Palaeontology

Infraorder Thalassinidea Latreille, 1831
 Superfamily Thalassinioidea Latreille, 1831
 Family Laomediidae Borradaile, 1903
 Genus *Jaxea* Nardo, 1847

Type species: *Jaxea nocturna* Nardo, 1847, by original designation.

Included fossil species: *J. nocturna* Nardo, 1847; *J. kümeli* Bachmayer, 1954.

Jaxea nocturna Nardo, 1847
 Figs. 2-6

Locality: Papiol (Barcelona).

Geological age: lower Pliocene.

Material: eighteen fragmentary and articulate specimens in dorsal and lateral view, 15-25 mm long. MGSB 51689, 51690, 51691-51693 (part and counter-part), 51692, 51765, 52051 (part and counter-part), 52052, 52053, 52054, 52056, 52057, 52058, 52059, 52060, 52061, 52062, 52066.

Discussion. Even though the preservation condition of the studied specimens did not allow a deep description, some morphological characters have been distinguished: *linea thalassinica* well defined and straight anteroposteriorly, all abdominal pleurae pointed ventrally with ventral denticles, telson with posterior margin convex and median longitudinal groove, P1 chelate, equal, greatly developed, nearly as long as body, movable finger slightly longer than fixed finger, and occlusal margins of both fingers with three or four large round teeth proximally, median triangular tooth and small round teeth in distal half.

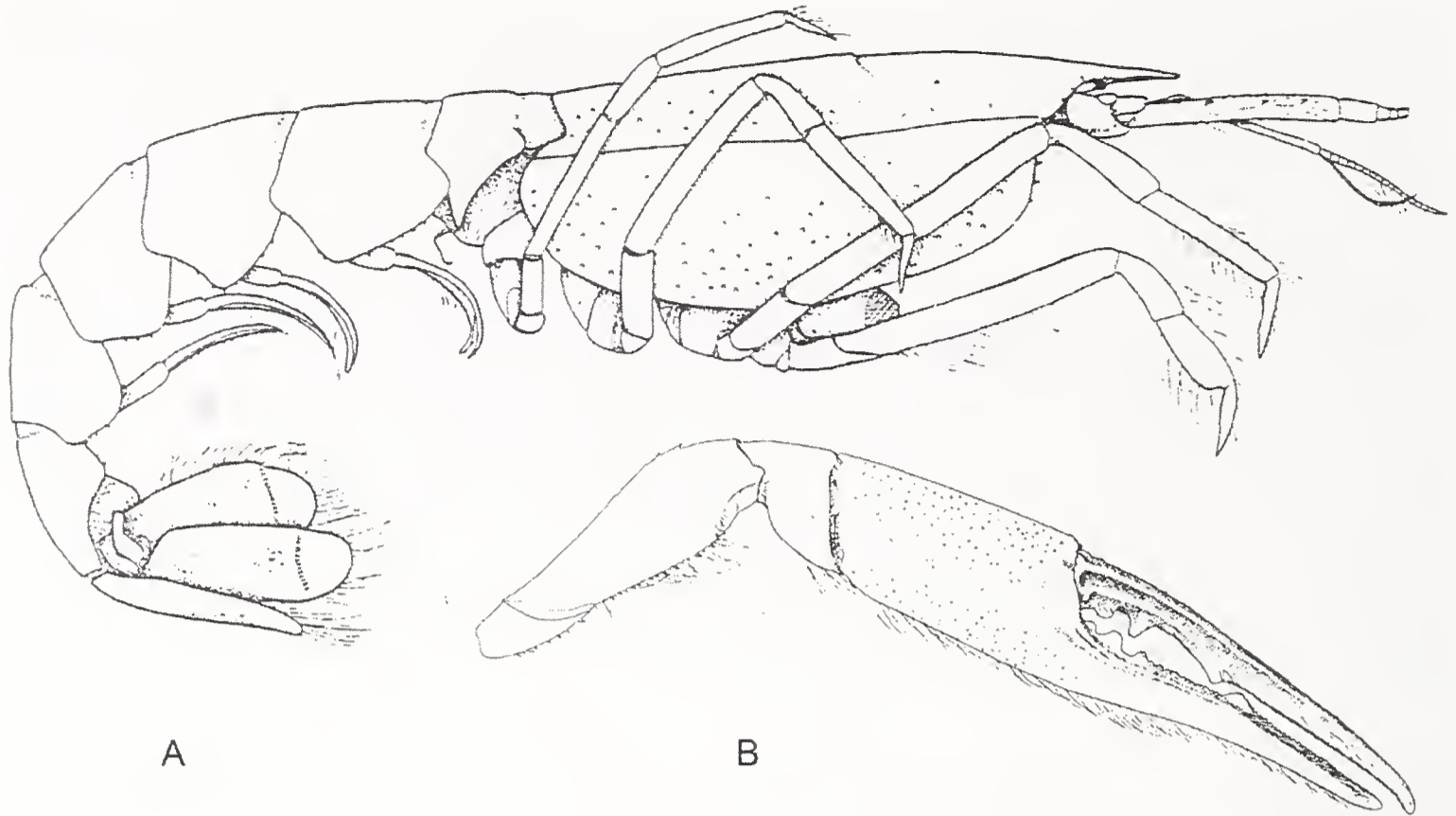


Fig. 2 – *Jaxea nocturna* Nardo, 1847. A) reconstruction / ricostruzione. B) P1. Living form / forma vivente (from Ngoc-Ho, 2003 / da Ngoc-Ho, 2003).



Fig. 3 – *Jaxea nocturna* Nardo, 1847, MGSB 52051 (x 1.5).



Fig. 4 – *Jaxea nocturna* Nardo, 1847, MGSB 52054 (x 2.5).

As reported by Ngoc-Ho (2003), the living *Jaxea nocturna* is characterized having following characters: triangular rostrum, pointed anteriorly; *linea thalassinica* present; cervical groove well defined; abdominal segments approximately of same length; telson longer than wide, longitudinal dorsal ridges present, posterior margin convex, median spine absent; P1 chelate, equal, and greatly developed, nearly as long as body; movable finger slightly longer than fixed finger; occlusal margins of movable and fixed fingers with three or four large round teeth proximally, median triangular tooth and small round teeth in distal half; and P2-5 slender and simple.

Most of these morphological characters are visible on the studied specimens that are ascribed to the extant *J. nocturna*, widespread in SW Scotland, Ireland, SW England, English Channel, Bay of Biscay, Canyon of Capbreton, and Marseille (France), South Spain, Atlantic coast of Morocco, and East Mediterranean Sea (Ngoc-Ho, 2003).



Fig. 5 – *Jaxea nocturna* Nardo, 1847, MGSB 52052 (x 2.5).

At present, *Jaxea* cfr. *nocturna* is reported only from the Pliocene of Tuscany (Italy) (Delle Cave, 1988). The author pointed out that the poor preservation of fossils did not allow to distinguish them from the living Mediterranean species. The oldest species of *Jaxea* could be *J. kumeli* from the Miocene of Hungary and Austria (Bachmayer, 1954). The author justified the erection of the new species, different from the living one, for its smaller size and slightly slender form. However, Müller (1993) and Mayoral *et al.* (1998) questioned the real systematic validity of this species, pointing out its similarity with the living form for some morphological characters. Finally, some undetermined chelae known from the lower Miocene (Karpatian) of North Hungary (Müller, 1993) are very similar in shape to those of the living form.

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Fig. 6 – *Jaxea nocturna* Nardo, 1847, MGSB 51689 (x 3.5).

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